

Gill as a genus of Tapirs, and adopts Dr. Gray's multitudinous division of the well-defined and eminently natural group of Eared Seals (*Otaria*). Many naturalists would hesitate before following Mr. Gill and Dr. Gray as authorities on these (or perhaps we may add on many other) subjects. But such and similar errors on questions of detail do not, we believe, affect the validity of Mr. Wallace's general conclusions. After the miserable stuff usually thrust before us in even the best and most recent treatises on geography, when the question of distribution comes to be touched upon, it is truly refreshing to turn to Mr. Wallace's broad and enlightened views on this subject. Future compilers of geographical manuals will have an easy task when they come to this most important but hitherto most ill-used part of their work, if they will only cast aside all that they have previously written, and borrow freely from the volume now before us.

Mr. Wallace has already registered many claims on the gratitude of naturalists present and future. In their interest he has explored the tropics of the east and the wildernesses of the west, and has brought home numberless novelties. He has written one of the best and most instructive books of naturalists' travels ever yet issued. He was, as is well known, the joint inventor with Mr. Darwin of the theory of "Natural Selection." But beyond all these scientific feats—and they are no mean ones—he has accomplished a task that will extend his fame even more widely amongst those who love science, as the author of the first sound treatise on zoological geography.

TWINING'S "SCIENCE MADE EASY"

Science Made Easy: a Series of Familiar Lectures on the Elements of Scientific Knowledge most Required in Daily Life. By Thomas Twining. (London: Chapman and Hall, 1876.)

THESE thin clearly printed quartos represent a remarkable experiment; an attempt to diffuse good teaching without good teachers, and to reproduce first-rate popular lectures without the need of multiplying skilled lecturers to deliver them. The author, Mr. Twining, constructed in 1856 an Economic Museum at Twickenham, which exhibited illustrations of scientific knowledge as applicable to the concerns of daily life. After fifteen years of continuous improvement this collection was destroyed by fire; but the experience gained in working it strongly impressed upon its author the conviction that the level of popular culture in this country is below the point at which intelligent appreciation of the simplest scientific object becomes possible; since his fine museum, with its methodical classification, its careful explanatory labelling, and the oral instruction of its active curator, failed to convey knowledge to the mass of visitors, to whom the very alphabet of science was unknown, and whose minds were untrained to the reception of the simplest truths. It is a bold thing for one man to enter on the task of educating a people; but Mr. Twining's enthusiasm was equal to the attempt. Precluded himself from lecturing, he prepared carefully-written lectures, founded on his Twickenham experience, and entrusted them to others to deliver. The swimming bath of East Lambeth, dry and unused in the winter, was fitted up as a lecture-room, and a course of five lectures was there

delivered to attentive audiences of more than a thousand persons. Demands for their repetition arose from all parts of London; and during the last nine seasons they have been delivered in various mission-rooms, institutes, and clubs of the working-classes to crowded and eager hearers. Uneducated learners, however respectfully attentive, yet carrying away from a lecture ideas crude and disjointed, may lapse within a few days into their original ignorance; Mr. Twining therefore began early to test his audiences by a system of examinations, so modified as to meet the inexperience of candidates and the elementary character of the teaching. Examination programmes were issued, containing a full set of possible questions on the course, from ten to fourteen being allotted to each lecture, with the understanding that from every one of these groups two questions would be selected by the examiner; while a preliminary examination "of a friendly kind" struck off all who were clearly incapable of presenting themselves with any prospect of success. Under these limitations we are told that a large number of candidates have obtained prizes and certificates at successive examinations, their papers showing that they had grasped and could reproduce intelligently a fair amount of the teaching which they had received.

Mr. Twining thinks that what has been done in London may easily be done elsewhere; he therefore prints his lectures, and prefaces them with minute instructions for the guidance of such amateurs as may wish to organise and carry out the course. In its delivery two persons are necessary, a "reader" and a "demonstrator." The reader must be a good elocutionist, and need be nothing more; need know nothing of science in general, nothing of the particular science on which he is discoursing. If he is clever enough to introduce here and there a happy local *à propos*, so much the better; but he is a mere vehicle for the transmission of the matter contained in his text, and is not required to do more than utter it. The demonstrator must know something of science, and have some practice in manipulation; but the simplicity of the experiments and the fulness of the printed directions reduce this necessity to a minimum, so that the author proposes to himself as suitable interpreters in a country town the national schoolmaster as reader, and the doctor or dispensing chemist as demonstrator. Reference numbers, dotted lines, and other devices, indicate the relative duties of the two performers, who cannot of course expect to work smoothly and in concert without repeated and laborious rehearsals.

The ordinary science teacher, luxuriating in abundant time, in ample apparatus, and in educated hearers, might be tempted to speak unfavourably of the lectures themselves, as too condensed for practical usefulness. He might say, and say truly, that the matter contained in the three lectures on Mechanical Physics could scarcely, by a master teaching boys, be included in the five-and-twenty lectures of an ordinary school term; that the two lectures on Chemistry are overgrown object lessons; that no one of the seventeen topics treated in the single lecture on Chemical Physics would demand less than an hour's careful teaching in a class-room; and that the "questionary," or examination programme, represents pure and simple cram. But such criticism would be wholly unfair applied to Mr. Twining's enterprise, as overlooking its

condition and its aim: the condition, an audience of weary working-men, with little time to give, and who reject all instruction which is not easily grasped and enlivened by amusing spectacles: the aim, to communicate entertaining knowledge in a utilitarian spirit, to open a glimpse of intellectual enjoyment such as may at the same time bear practically on the comfort and happiness of daily life. In the experience necessary for such a taste Mr. Twining probably stands alone, and in reviewing the forms his efforts have taken we may fairly bow to the judgment which shaped them.

But the main objection to this curious and novel system will occur to everyone. Is it possible that any man uttering the knowledge and the thoughts of others on a subject with which he is quite unfamiliar can import into his task the enthusiasm necessary to kindle and inform an audience? A purchased sermon read from a pulpit never yet edified anyone; will it be more inspiring to receive scientific truth from the lips of a man who articulates by rote instead of teaching from that lofty standpoint of superior knowledge which converts hearers into disciples? Mr. Twining speaks gratefully of the admirable readers he has been fortunate enough to find in London. They were probably not mere elocutionists, but possessed of dramatic minds, and able to generate at will enthusiasm in a noble though unfamiliar subject, and their like will not be met with every day. Mr. Twining shows his uneasiness on this point by his strong injunctions to careful practice on the part both of reader and demonstrator, and whoever attempts to carry out the scheme will have to lay special stress on this. Nor can we omit to mention the subject of expense. The apparatus necessary only for the six lectures before us costs, exclusive of plans and diagrams, from 44*l.* to 48*l.* 10*s.* A club, society, or institute, including dexterous workmen amongst its members, could probably obtain all that is wanted at half this price, but in many places the difficulty of meeting the expense might turn the scale against the introduction of the lectures.

These difficulties have, no doubt, been well considered by the author of the scheme, and are thought by him to be not insurmountable. We most sincerely hope that it may be found so. His enterprise will be watched with no slight interest by all who feel that the spread of scientific knowledge among the operative classes is a pressing national necessity, and that one who devotes to it, as Mr. Twining has done, experience, thought, and toil, deserves the gratitude and the help of his countrymen.

W. T.

OUR BOOK SHELF

Life with the Hamran Arabs. An account of a Sporting Tour of some Officers of the Guards in the Soudan during the winter of 1874-5. By Arthur R. Myers, Surgeon, Coldstream Guards. With Photographs. (London: Smith, Elder, and Co., 1876.)

The sporting tour of which Mr. Myers gives the narrative in this volume was made at the same time as that described by the Earl of Mayo in the work which we recently noticed. Indeed the two parties started together, and their work lay in regions not far distant from each other. Mr. Myers and his party were much more fortunate than the Earl's party. They did not meet with so many hindrances, and were much more fortunate in the number

and variety of animals that came in the way of their rifles. The region to which Mr. Myers's work refers is on the borders of Abyssinia and Egypt, and has been already made familiar to English readers by Sir Samuel Baker in his "Nile Tributaries." Mr. Myers simply pretends to tell of his sporting adventures, and therefore we have no reason to complain if he adds little to our knowledge of the country of the Hamran Arabs. He writes in an unpretentious style, and his work will be found interesting by the general reader, and specially so by those who love sport. It contains photographs of some of the trophies brought home, arranged by Ward and Co.; they give a good idea of the variety of animal life to be met with in this part of the Soudan.

LETTERS TO THE EDITOR

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The Decrease of the Polynesians¹

I BELIEVE there are some errors popularly received respecting the rapidity with which the inhabitants of Polynesia, as a whole, are disappearing before an advancing civilisation. I wish to make a few statements on this subject in connection with a review of Miss Bird's book on "The Hawaiian Archipelago," which appeared in NATURE, vol. xi. p. 322.

The primary source of error is the excessively high estimates as to the population of different islands in Polynesia made by early visitors and residents. In most of the islands the people live chiefly, or entirely on the coasts; whereas, in the estimates, allowance is made for a proportionate population in the interior.

Another error, I believe, is the supposition that the decrease of the people is entirely (or almost entirely) owing to their contact with foreigners. From personal knowledge of Polynesia I feel convinced that the people were rapidly decreasing before their intercourse with civilised races commenced.

It is also a mistake to suppose that decrease is by any means universal at the present time. While in some islands the decrease of the natives has been accelerated since they have come into contact with modern civilisation and its attendant evils, in other islands the previous decrease has been greatly retarded, or even changed into an increase, by the beneficial influences of a Christian civilisation. This change has been brought about by such causes as the following:—The partial or complete cessation of wars; the discontinuance of human sacrifices (in some islands the cessation of cannibalism may be added); the cessation of infanticide; the greater respect paid to women, which leads to their release from some of the hard work which, in heathen times (in some portions of the Pacific) fell almost entirely to their share, and the consequent increase of living and healthy progeny; the increased care taken of infants and aged people, and the general progress of industry resulting from more settled habits, which leads to a more regular supply of food.

As an example, in proof of the correctness of my statements I will cite the Samoan Islands. In the "Encyclopædia Britannica" (eighth edition) we read:—"The population of Samoa

¹ I wrote this paper some months ago, intending to send it for publication in NATURE, but I afterwards determined on withholding it for the present, hoping at some future time to discuss in a more systematic and thorough manner this subject, together with some other questions bearing on the ethnology and anthropology of Polynesia. I am now, however, induced, by the reference in Prof. Rolleston's address before the British Association at Bristol, to publish it as it was first written, hoping it may prove a small contribution towards a correct understanding of this subject.

I take this opportunity to thank Dr. Rolleston for putting in its true light the relation which the work of missionaries bears to the decrease of Aboriginal populations. It is high time that the ignorance, prejudice, and narrowness manifested by many literary and scientific men gave place to a broad, common-sense, and enlightened view of the matter. Missionaries are sometimes represented as if they were the actual destroyers of the weaker races; a view somewhat smartly set forth in one of Mr. Bernard Quaritch's scientific book catalogues (No. 294, Jan. 1875) in the following words:—"The missionary is a grand and striking figure in the history of the world. Robbed in black, and bearing the *Word of Life*, he moves among the weaker races of mankind; around his path they sicken and perish, and countless nations of men are swept away." In Polynesia, the agents of the London Missionary Society, at least, usually dress in white, and not in black, and I imagine most sensible missionaries who live in the tropics, do as we do in this respect. But whether we wear the ominous black, or adopt the more hopeful (or comfortable) white, I fancy Mr. Quaritch is guilty of what the logicians call an *ignoratio elenchii*. S. J. W.
Samoa, Dec. 30, 1875